

A. Holleran

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Page 1



PH 14

DATE: 05/21/2003
TIME: 13:19:50

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/724,584

Input Set : N:\CrF3\RULE60\09724584.RAW.txt
Output Set: N:\CRF4\05212003\I724584.raw

1 <110> APPLICANT: Wood, Kenneth W.
2 Sakowicz, Roman
3 Goldstein, Lawrence S.B.
4 Cleveland, Don W.
5 The Regents of the University of California
6 <120> TITLE OF INVENTION: Plus End-Directed Microtubule Motor Required for
7 Chromosome Congression
8 <130> FILE REFERENCE: 18557C-000110US
9 <140> CURRENT APPLICATION NUMBER: 09/724,584
10 <141> CURRENT FILING DATE: 2000-11-28
12 <150> PRIOR APPLICATION NUMBER: US/09/150,867
13 <151> PRIOR FILING DATE: 1998-09-10
16 <150> PRIOR APPLICATION NUMBER: US 60/058,645
17 <151> PRIOR FILING DATE: 1997-09-11
18 <160> NUMBER OF SEQ ID NOS: 11
19 <170> SOFTWARE: PatentIn Ver. 2.0
21 <210> SEQ ID NO: 1
22 <211> LENGTH: 2954
23 <212> TYPE: PRT
24 <213> ORGANISM: Xenopus sp.
25 <220> FEATURE:
26 <223> OTHER INFORMATION: Xenopus centromere-associated protein-E (XCENP-E)
27 member of the kinesin superfamily of microtubule
28 motor proteins
29 <220> FEATURE:
30 <221> NAME/KEY: DOMAIN
31 <222> LOCATION: (1)..(472)
32 <223> OTHER INFORMATION: kinesin like motor domain
33 <220> FEATURE:
34 <221> NAME/KEY: DOMAIN
35 <222> LOCATION: (473)..(2752)
36 <223> OTHER INFORMATION: rod domain
37 <220> FEATURE:
38 <221> NAME/KEY: DOMAIN
39 <222> LOCATION: (2753)..(2954)
40 <223> OTHER INFORMATION: tail domain
41 <400> SEQUENCE: 1
42 Met Ser Glu Gly Asp Ala Val Lys Val Cys Val Arg Val Arg Pro Leu
43 1 5 10 15
44 Ile Gln Arg Glu Gln Gly Asp Gln Ala Asn Leu Gln Trp Lys Ala Gly
45 20 25 30
46 Asn Asn Thr Ile Ser Gln Val Asp Gly Thr Lys Ser Phe Asn Phe Asp
47 35 40 45

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48 Arg Val Phe Asn Ser His Glu Ser Thr Ser Gln Ile Tyr Gln Glu Ile
49      50      55      60
50 Ala Val Pro Ile Ile Arg Ser Ala Leu Gln Gly Tyr Asn Gly Thr Ile
51      65      70      75      80
52 Phe Ala Tyr Gly Gln Thr Ser Ser Gly Lys Thr Tyr Thr Met Met Gly
53      85      90      95
54 Thr Pro Asn Ser Leu Gly Ile Ile Pro Gln Ala Ile Gln Glu Val Phe
55      100      105      110
56 Lys Ile Ile Gln Glu Ile Pro Asn Arg Glu Phe Leu Leu Arg Val Ser
57      115      120      125
58 Tyr Met Glu Ile Tyr Asn Glu Thr Val Lys Asp Leu Leu Cys Asp Asp
59      130      135      140
60 Arg Arg Lys Lys Pro Leu Glu Ile Arg Glu Asp Phe Asn Arg Asn Val
61      145      150      155      160
62 Tyr Val Ala Asp Leu Thr Glu Glu Leu Val Met Val Pro Glu His Val
63      165      170      175
64 Ile Gln Trp Ile Lys Lys Gly Glu Lys Asn Arg His Tyr Gly Glu Thr
65      180      185      190
66 Lys Met Asn Asp His Ser Ser Arg Ser His Thr Ile Phe Arg Met Ile
67      195      200      205
68 Val Glu Ser Arg Asp Arg Asn Asp Pro Thr Asn Ser Glu Asn Cys Asp
69      210      215      220
70 Gly Ala Val Met Val Ser His Leu Asn Leu Val Asp Leu Ala Gly Ser
71      225      230      235      240
72 Glu Arg Ala Ser Gln Thr Gly Ala Glu Gly Val Arg Leu Lys Glu Gly
73      245      250      255
74 Cys Asn Ile Asn Arg Ser Leu Phe Ile Leu Gly Gln Val Ile Lys Lys
75      260      265      270
76 Leu Ser Asp Gly Gln Ala Gly Gly Phe Ile Asn Tyr Arg Asp Ser Lys
77      275      280      285
78 Leu Thr Arg Ile Leu Gln Asn Ser Leu Gly Gly Asn Ala Lys Thr Val
79      290      295      300
80 Ile Ile Cys Thr Ile Thr Pro Val Ser Phe Asp Glu Thr Leu Ser Thr
81      305      310      315      320
82 Leu Gln Phe Ala Ser Thr Ala Lys His Val Arg Asn Thr Pro His Val
83      325      330      335
84 Asn Glu Val Leu Asp Asp Glu Ala Leu Leu Lys Arg Tyr Arg Lys Glu
85      340      345      350
86 Ile Leu Asp Leu Lys Lys Gln Leu Glu Asn Leu Glu Ser Ser Ser Glu
87      355      360      365
88 Thr Lys Ala Gln Ala Met Ala Lys Glu Glu His Thr Gln Leu Leu Ala
89      370      375      380
90 Glu Ile Lys Gln Leu His Lys Glu Arg Glu Asp Arg Ile Trp His Leu
91      385      390      395      400
92 Thr Asn Ile Val Val Ala Ser Ser Gln Glu Ser Gln Gln Asp Gln Arg
93      405      410      415
94 Val Lys Arg Lys Arg Arg Val Thr Trp Ala Pro Gly Lys Ile Gln Asn
95      420      425      430
96 Ser Leu His Ala Ser Gly Val Ser Asp Phe Asp Met Leu Ser Arg Leu

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97          435          440          445
98  Pro Gly Asn Phe Ser Lys Lys Ala Lys Phe Ser Asp Met Pro Ser Phe
99          450          455          460
100  Pro Glu Ile Asp Asp Ser Val Cys Thr Glu Phe Ser Asp Phe Asp Asp
101  465          470          475          480
102  Ala Leu Ser Met Met Asp Ser Asn Gly Ile Asp Ala Glu Trp Asn Leu
103          485          490          495
104  Ala Ser Lys Val Thr His Arg Glu Lys Thr Ser Leu His Gln Ser Met
105          500          505          510
106  Ile Asp Phe Gly Gln Ile Ser Asp Ser Val Gln Phe His Asp Ser Ser
107          515          520          525
108  Lys Glu Asn Gln Leu Gln Tyr Leu Pro Lys Asp Ser Gly Asp Met Ala
109          530          535          540
110  Glu Cys Arg Lys Ala Ser Phe Glu Lys Glu Ile Thr Ser Leu Gln Gln
111  545          550          555          560
112  Gln Leu Gln Ser Lys Glu Glu Glu Lys Lys Glu Leu Val Gln Ser Phe
113          565          570          575
114  Glu Leu Lys Ile Ala Glu Leu Glu Glu Gln Leu Ser Val Lys Ala Lys
115          580          585          590
116  Asn Leu Glu Met Val Thr Asn Ser Arg Glu His Ser Ile Asn Ala Glu
117          595          600          605
118  Val Gln Thr Asp Val Glu Lys Glu Val Val Arg Lys Glu Met Ser Val
119          610          615          620
120  Leu Gly Asp Ser Gly Tyr Asn Ala Ser Asn Ser Asp Leu Gln Asp Ser
121  625          630          635          640
122  Ser Val Asp Gly Lys Arg Leu Ser Ser Ser His Asp Glu Cys Ile Glu
123          645          650          655
124  His Arg Lys Met Leu Glu Gln Lys Ile Val Asp Leu Glu Glu Phe Ile
125          660          665          670
126  Glu Asn Leu Asn Lys Lys Ser Glu Asn Asp Lys Gln Lys Ser Ser Glu
127          675          680          685
128  Gln Asp Phe Met Glu Ser Ile Gln Leu Cys Glu Ala Ile Met Ala Glu
129  690          695          700
130  Lys Ala Asn Ala Leu Glu Leu Ala Leu Met Arg Asp Asn Phe Asp
131  705          710          715          720
132  Asn Ile Ile Leu Glu Asn Glu Thr Leu Lys Arg Glu Ile Ala Asp Leu
133          725          730          735
134  Glu Arg Ser Leu Lys Glu Asn Gln Glu Thr Asn Glu Phe Glu Ile Leu
135          740          745          750
136  Glu Lys Glu Thr Gln Lys Glu His Glu Ala Gln Leu Ile His Glu Ile
137          755          760          765
138  Gly Ser Leu Lys Lys Leu Val Glu Asn Ala Glu Met Tyr Asn Gln Asn
139          770          775          780
140  Leu Glu Glu Asp Leu Glu Thr Lys Thr Lys Leu Leu Lys Glu Gln Glu
141  785          790          795          800
142  Ile Gln Leu Ala Glu Leu Arg Lys Arg Ala Asp Asn Leu Gln Lys Lys
143          805          810          815
144  Val Arg Asn Phe Asp Leu Ser Val Ser Met Gly Asp Ser Glu Lys Leu
145          820          825          830

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146 Cys Glu Glu Ile Phe Gln Leu Lys Gln Ser Leu Ser Asp Ala Glu Ala
147      835      840      845
148 Val Thr Arg Asp Ala Gln Lys Glu Cys Ser Phe Leu Arg Ser Glu Asn
149      850      855      860
150 Leu Glu Leu Lys Glu Lys Met Glu Asp Thr Ser Asn Trp Tyr Asn Gln
151      865      870      875      880
152 Lys Glu Lys Ala Ala Ser Leu Phe Glu Lys Gln Leu Glu Thr Glu Lys
153      885      890      895
154 Ser Asn Tyr Lys Lys Met Glu Ala Asp Leu Gln Lys Glu Leu Gln Ser
155      900      905      910
156 Ala Phe Asn Glu Ile Asn Tyr Leu Asn Gly Leu Leu Ala Gly Lys Val
157      915      920      925
158 Pro Arg Asp Leu Leu Ser Arg Val Glu Leu Glu Lys Lys Val Ser Glu
159      930      935      940
160 Phe Ser Lys Gln Leu Glu Lys Ala Leu Glu Glu Lys Asn Ala Leu Glu
161      945      950      955      960
162 Asn Glu Val Thr Cys Leu Ser Glu Tyr Lys Phe Leu Pro Asn Glu Val
163      965      970      975
164 Glu Cys Leu Lys Asn Gln Ile Ser Lys Ala Ser Glu Glu Ile Met Leu
165      980      985      990
166 Leu Lys Gln Glu Gly Glu His Ser Ala Ser Ile Ile Ser Lys Gln Glu
167      995      1000      1005
168 Ile Ile Met Gln Glu Gln Ser Glu Gln Ile Leu Gln Leu Thr Asp Glu
169      1010      1015      1020
170 Val Thr His Thr Gln Ser Lys Val Gln Gln Thr Glu Glu Gln Tyr Leu
171      1025      1030      1035      1040
172 Glu Met Lys Lys Met His Asp Asp Leu Phe Glu Lys Tyr Ile Arg Asn
173      1045      1050      1055
174 Lys Ser Glu Ala Glu Asp Leu Leu Arg Glu Met Glu Asn Leu Lys Gly
175      1060      1065      1070
176 Thr Met Glu Ser Val Glu Val Lys Ile Ala Asp Thr Lys His Glu Leu
177      1075      1080      1085
178 Glu Glu Thr Ile Arg Asp Lys Glu Gln Leu Leu His Glu Lys Lys Tyr
179      1090      1095      1100
180 Phe Phe Gln Ala Met Gln Thr Ile Phe Pro Ile Thr Pro Leu Ser Asp
181      1105      1110      1115      1120
182 Ser Leu Pro Pro Ser Lys Leu Val Glu Gly Asn Ser Gln Asp Pro Ile
183      1125      1130      1135
184 Glu Ile Asn Asp Tyr His Asn Leu Ile Ala Leu Ala Thr Glu Arg Asn
185      1140      1145      1150
186 Asn Ile Met Val Cys Leu Glu Thr Glu Arg Asn Ser Leu Lys Glu Gln
187      1155      1160      1165
188 Val Ile Asp Leu Asn Thr Gln Leu Gln Ser Leu Gln Ala Gln Ser Ile
189      1170      1175      1180
190 Glu Lys Ser Asp Leu Gln Lys Pro Lys Gln Asp Leu Glu Glu Gly Glu
191      1185      1190      1195      1200
192 Val Lys Leu Leu Leu Glu Met Glu Leu Leu Lys Gly His Leu Thr Asp
193      1205      1210      1215
194 Ser Gln Leu Ser Ile Glu Lys Leu Gln Leu Glu Asn Leu Glu Val Thr

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195          1220          1225          1230
196  Glu Lys Leu Gln Thr Leu Gln Glu Glu Met Lys Asn Ile Thr Ile Glu
197          1235          1240          1245
198  Arg Asn Glu Leu Gln Thr Asn Phe Glu Asp Leu Lys Ala Glu His Asp
199          1250          1255          1260
200  Ser Leu Lys Gln Asp Leu Ser Glu Asn Ile Glu Gln Ser Ile Glu Thr
201  1265          1270          1275          1280
202  Gln Asp Glu Leu Arg Ala Ala Gln Glu Glu Leu Arg Glu Gln Lys Gln
203          1285          1290          1295
204  Leu Val Asp Ser Phe Arg Gln Gln Leu Leu Asp Cys Ser Val Gly Ile
205          1300          1305          1310
206  Ser Ser Pro Asn His Asp Ala Val Ala Asn Gln Glu Lys Val Ser Leu
207          1315          1320          1325
208  Gly Glu Val Asn Ser Leu Gln Ser Glu Met Leu Arg Gly Glu Arg Asp
209          1330          1335          1340
210  Glu Leu Gln Thr Ser Cys Lys Ala Leu Val Ser Glu Leu Glu Leu Leu
211  1345          1350          1355          1360
212  Arg Ala His Val Lys Ser Val Glu Gly Glu Asn Leu Glu Ile Thr Lys
213          1365          1370          1375
214  Lys Leu Asn Gly Leu Glu Lys Glu Ile Leu Gly Lys Ser Glu Glu Ser
215          1380          1385          1390
216  Glu Val Leu Lys Ser Met Leu Glu Asn Leu Lys Glu Asp Asn Asn Lys
217          1395          1400          1405
218  Leu Lys Glu Gln Ala Glu Glu Tyr Ser Ser Lys Glu Asn Gln Phe Ser
219          1410          1415          1420
220  Leu Glu Glu Val Phe Ser Gly Ser Gln Lys Leu Val Asp Glu Ile Glu
221  1425          1430          1435          1440
222  Val Leu Lys Ala Gln Leu Lys Ala Ala Glu Glu Arg Leu Glu Ile Lys
223          1445          1450          1455
224  Asp Arg Asp Tyr Phe Glu Leu Val Gln Thr Ala Asn Thr Asn Leu Val
225          1460          1465          1470
226  Glu Gly Lys Leu Glu Thr Pro Leu Gln Ala Asp His Glu Glu Asp Ser
227          1475          1480          1485
228  Ile Asp Arg Arg Ser Glu Glu Met Glu Ile Lys Val Leu Gly Glu Lys
229          1490          1495          1500
230  Leu Glu Arg Asn Gln Tyr Leu Leu Glu Arg Leu Gln Glu Glu Lys Leu
231  1505          1510          1515          1520
232  Glu Leu Ser Asn Lys Leu Glu Ile Leu Gln Lys Glu Met Glu Thr Ser
233          1525          1530          1535
234  Val Leu Leu Lys Asp Asp Leu Gln Gln Lys Leu Glu Ser Leu Leu Ser
235          1540          1545          1550
236  Glu Asn Ile Ile Leu Lys Glu Asn Ile Asp Thr Thr Leu Lys His His
237          1555          1560          1565
238  Ser Asp Thr Gln Ala Gln Leu Gln Lys Thr Gln Gln Glu Leu Gln Leu
239          1570          1575          1580
240  Ala Lys Asn Leu Ala Ile Ala Ala Ser Asp Asn Cys Pro Ile Thr Gln
241  1585          1590          1595          1600
242  Glu Lys Glu Thr Ser Ala Asp Cys Val His Pro Leu Glu Glu Lys Ile
243          1605          1610          1615

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VERIFICATION SUMMARY

PATENT APPLICATION: **US/09/724,584**

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